Lower Thames Crossing

Minor Refinement Consultation: May 2023

Gravesham Borough Council Comments

Introduction

1. This formal consultation by National Highways is seeking feedback on three issues which will require changes to the submitted Development Consent Order (DCO) application. Two of the issues raised relate to matters of detail in Thurrock (the amended proposals at East Tilbury and northern entrance to the tunnel), on which the Council makes no comment. The other issue is the proposed reduction of Nitrogen Deposition compensation area and Order Limits at Blue Bell Hill and Burham (MRC01).
2. In addition, section 4 of the consultation document provides what is described as "a construction update". This update sets out how the tunnels beneath the Thames could be constructed by either two tunnel boring machines, or by using a single tunnel boring machine to construct both.
3. The changes proposed are described generally as "very limited in scope and impact" (see the foreword) and "localised in nature and small in extent, with only minimal change to the impacts which we reported in our DCO Application" (in part 2).

Reduction of Nitrogen Deposition compensation area and Order Limits at Blue Bell Hill and Burham (MRC01)

4. The detail of the proposed changes to the order limits at Blue Bell Hill and Burham are mainly a matter for others, but it does raise a wider issue about the underpinning calculation which is relevant for this Council.
5. National Highways' original proposal in its local refinement consultation 2022 [APP-088] was to provide approximately 250 ha of land to be identified to address the potential effects to nearby habitats of nitrogen deposition from traffic using the Lower Thames Crossing. In the original consultation 279 ha of land was identified to give flexibility. The DCO application, on submission, provided for 245ha of compensatory habitat. This Minor refinement consultation proposes to remove the Burham site (10ha) and reduce the size of the Blue Bell Hill site (by 29ha), thereby reducing the overall total proposed to 205 ha. The proposed land area is therefore 45 ha less than in the original proposal.
6. The "Terrestrial and Marine Biodiversity" section of the table (p.10) in the consultation document (which sets out an environmental assessment of the reduction of the nitrogen compensation areas) says that there would be a 'a reduction in the overall extent of habitat creation, but the total area of nitrogen deposition compensation provided is still considered to result in effective compensation for these adverse impacts of the Project'. It is unclear on what evidence this assertion is based and without this information, the reduction below original 250 ha cannot be supported. If the sites identified in the application documents are not deliverable in their entirety, then additional sites should be identified to meet the compensatory habitat land area of 250 ha, unless the evidence mentioned above is provided.

7. The Local Refinement Consultation (2022)[1] says at p.142 that the designated sites most likely to be affected by impacts of nitrogen deposition are 'south of the River Thames clustered around two locations', which are along the A2/M2 corridor and around M2 J3 (Blue Bell Hill).

8. A rough calculation suggests that 86 ha of compensation land is south of the river (Blue Bell Hill plus sites in Gravesham). This is 42% of the total area proposed which does not relate well to the geographical distribution of the impact as noted above i.e. the compensatory habitat should be closely related to the areas where the deposition is taking place, and this is not what is being proposed.

Single Tunnel Boring Machine

9. Section 4 of the consultation document ("Construction Update") discusses the possible use of one boring machine rather than two, leaving the decision whether to actually use one or two for the contractor at a later stage. Section 4 essentially says, in the context of the Environmental Statement, that although there are some timing differences, in terms of the assumptions made the environmental impacts are not significantly different. The smaller scale of works necessary initially at the northern portal means that tunnelling can start 10 months earlier. It is not clear how this relates to the timescales shown in Plate 2.13 in chapter 2 of the Environmental Statement[2].

10. Other than the brief comments in the table on page 30, section 4 of the consultation document provides no detailed explanation of why this proposal is not considered likely to result in new or different significant environmental effects. To understand National Highways' position, it is necessary to consider in addition to the consultation document, [APP-140] 6.1 Environmental Statement Chapter 2. Also the Council received further explanation verbally at a joint meeting the Council and Kent County Council had with National Highways on 1 June 2023. The initial reaction to the proposal raised a number of issues over what the potential implications might be, and a lack of clarity over the underlying assumptions.

11. The summary position for National Highway's proposal for a single TBM would appear to be:

    a. The requirement for the Ground stabilisation tunnel is not affected, though the actual need for this is subject to detailed design of the main tunnel boring machine (TBM) and its ability to deal with the ground conditions under the Marshes. At that point the tunnel boring machine is 75% in chalk and 25% silt/gravel etc. (and overall 90% of the boring is in chalk).

    b. The construction of the first bore is no different to that assumed in the Environmental Statement. The TBM proceeds from north to south. It is assumed to be a slurry machine, meaning that the excavated material is mixed with water and piped back to Thurrock, where is dried and used for landscaping.

    c. Tunnel segments are manufactured in Thurrock and used to line the tunnel as it proceeds. The deck within the tunnel for the running lanes is then constructed behind the TBM. The TBM(s) operate at up to 5.5 atmospheres when in saturated ground (i.e. under the river).

[1] Lower Thames Crossing Guide to Local Refinement Consultation May 2022 [APP 088]
[2] 6.1 APP-140 Environmental Statement: Chapter 2 Project Description [APP-140] Section B timeline

d. In the two TBM option, the same process happens for the second bore. On arrival in Gravesham, in the 28m deep reception pit, both machines would be broken down and craned out for removal as set out in the Environmental Statement.

e. In the single boring machine option, on arrival to Gravesham the machine would be broken down, maintained, and reversed to start the south to north bore. Dismantling and removal would now be occurring at the northern portal, but the same cranes would still be needed at the southern portal to enable reversal. The approach cutting to the southern portal would need to be excavated sufficiently to allow this to happen.

f. The south to north bore would proceed in the same way as north to south, but the logistics would be more complicated (this is not articulated in the consultation and so the below is inferred from the information provided at the joint meeting):

    i. Slurry would be piped back through the newly bored tunnel, with additional pumps needed.

    ii. Water supply would come from the Thurrock side via the new tunnel.

    iii. Multi-service vehicles (MSV's) would be used to transport tunnel segments and other materials, which for the northbound bore would have to be driven through the newly bored tunnel and then re-directed to the active south to north bore adding at least 4.25km to their overall journey. The southern works compounds do not include locations for tunnel segment storage, so they would need to be brought from Thurrock on a just-in-time basis.

    iv. The specialist tunnel boring staff would still be based in Thurrock (and there would be a small reduction in the numbers as only one team is needed at the face not two). They would need to travel through the newly bored tunnel to reach their place of work. There is no specialist accommodation in the southern works compound (or seemingly provision for pressurisation issues).

    v. At the southern tunnel portal the MSV's and slurry and water pipework would need to do a U turn into the bore going towards Thurrock. This must by definition result in increased activity over time at the portal as material is transferred from tunnel to tunnel.

    vi. Construction of the cross passages could not occur until later in the programme.

    vii. The consultation says "There would be a minimal impact on the timing for construction of the tunnels". But running two TBMs in parallel must be significantly quicker than running one TBM, turning it around and running it back to Thurrock, irrespective of the point about tunnelling starting 10 months earlier.

g. As a result of this approach:

    i. It is agreed that "a single TBM would still generate the same volume of material" but the location of that material coming from the tunnel could change i.e. it potentially would not all come out into Thurrock.

ii. The physical operations at the portals would be similar apart from the additional transport distances for access to the 2nd bore and the lack of a need to remove two tunnel boring machines on the Gravesham side. That said logically additional storage and other facilities will be needed at or around the southern portal to support the boring operation.

iii. In this regard it is noted that there were a significant changes in "other facilities to enable construction" shown on sheet 13 (southern tunnel portal) of the 2.17 Temporary Works plans between the submitted [APP-51] and revised version [AS-034] published by the Examining Authority on 22 December 2022. Is this related?

iv. On the Gravesham side operations are in the deep cutting leading up to the southern portal (28m depth at the portal).

v. Additional pumping equipment, movement of materials and people would occur which must increase disturbance.

vi. The consultation document advises that the use of a single TBM will save approximately 38,000 tonnes of carbon (CO_2e). It is not clear if this has considered the cost of the additional transport and pumping which needs to be considered in an overall carbon balance.

vii. Any significant deviation from this (e.g. different boring technology, spoil disposal south of the river) would potentially fall outside the terms of the DCO application as assessed and require appropriate procedures to be followed.

viii. There may be implications for Kent based Emergency Services since in the event of any incidents during construction in the south to north bore these would require input from them rather than the Essex equivalents as in the two boring machine option.

12. The Council expects National Highways to produce amendments to Chapter 2 of the ES as other environmental information (and to any other relevant chapter(s) and documents) addressing the points raised above, among others, and submit them to the Examination. This should include a clear revised timeline so that the any implications (or none) can be understood. As written, Chapter 2 does imply that one construction compound for this element of the work is highly desirable (e.g. para 2.7.114 'Driving both tunnels from the northern entrance would negate the need for separate construction sites and would mean only a single central location would be needed for all tunnelling logistics, instead of needing to relocate them'.). The explanation given implies that this need not be the case. There is therefore a potential change to the significant environmental effects (given that both options remain on the table at present).

13. The Council also expects that some of the information provided in the consultation document should, if a change application is made and accepted, form the basis of commitments either in the DCO itself or in control documents. In particular, if a single tunnel boring machine is eventually adopted, then the contractor must be required to remove all the tunnel spoil from the northern end of the tunnel and all the tunnel segments must be brought in from the north end of the tunnel.

Other comments

14. As a general point, as a result of the two year delay announced by the Secretary of State, the Council is assuming that National Highways will be slipping the construction timeline forward by two years (i.e. start in January 2027 rather than 2025) for any matter where the absolute (as opposed to relative) timing may be an issue. The Council would welcome confirmation of this.

15. It is also pertinent to note that the A226 Galley Hill Road between Northfleet and Swanscombe is closed as a result of a cliff fall, and it is very unlikely that that this will be resolved in the short or medium term. This is placing additional traffic on the A2, and the Ebbsfleet and Bean junctions in particular as the only practical diversion route for other than very local traffic.

Summary

16. In summary:

- The Council considers that any change to matters like, but not confined to, the spoil disposal arrangements, water supply arrangements, pre-casting of tunnel segments could give rise to new or different likely significant environmental effects, and therefore require other environmental to be produced and to accompany the change application
- Unless the application documents already do so, the Applicant should submit any changes to those documents so as to ensure that all tunnel spoil will be removed from the northern end of the tunnel, and all tunnel segments will be brought in from the northern end of the tunnel, whichever tunnelling method is adopted
- The use of one rather than two TBMs does by definition appear to constitute a change in the construction proposals for the project
- There is no clear evidence in the consultation document to explain the likely implications of the proposed change
- Chapter 2 of the application Environmental Statement, and any subsidiary documents will need to be updated to reflect the proposed change
- This will enable a proper view to be taken on whether this is a material change for assessment purposes
- Further explanation is required of the reduction in nitrogen deposition mitigation land area and in particular whether the area that would remain provides sufficient mitigation for the effects of nitrogen deposition in the local area, bearing in mind the Applicant has said the effects are more significant south of the river.

19 June 2023